

ACEROS PARA TRABAJO EN FRÍO

Formatos disponibles

Productos largos

Forja de matriz abierta

Chapas

Descripción

Acero para herramientas de corte (matrices y punzones), herramientas de estampación y punzonado, machos de roscar, herramientas de carpintería, cuchillas de maquinaria para la industria de madera, papel y metalúrgica, herramientas de medición y moldes para la inyección de plásticos.

Propiedades

Acero para herramientas apto para temple en aceite con pocos cambios dimensionales.

Aplicaciones

> Conformado en frío

> Corte fino / Troquelado / Estampación

> Componentes estándar (moldes, placas, clavos, punzones)

Designación		Estándares	
1.2510	SEL	4957	EN ISO
T31501	UNS	A681	ASTM
100MnCrW4	EN		
O1	AISI		
~SKS3	JIS		

Composición Química

C	Si	Mn	Cr	V	W
0,95	0,25	1,10	0,55	0,10	0,55

Características

	Resistencia a la compresión	Estabilidad dimensional durante el tratamiento térmico	Tenacidad	Resistencia al desgaste abrasivo
BÖHLER K460	★★★★	★	★★★★★	★★
BÖHLER K245	★★	★	★★★★★	★
BÖHLER K455	★★★	★	★★★★★	★
BÖHLER K720	★★	★	★★★★★	★

Estado de suministro

recocido	
Dureza	máx. 220 HB

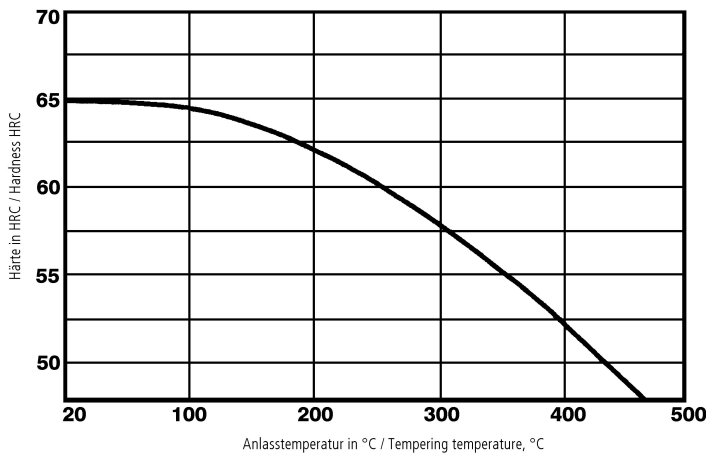
Tratamiento térmico

Recocido		
Temperatura (°C)	710 to 750	Slow controlled cooling in furnace at a rate of 50 to 68°F/hr (10 to 20°C/hr) down to approx. 1112°F (600°C), further cooling in air.

Aliviar el estrés		
Temperatura (°C)	650	Slow cooling in furnace. Intended to relieve stresses set up by extensive machining, or in complex shapes. After through heating, hold in neutral atmosphere for 1-2 hours.

Temple y revenido		
Temperatura (°C)	780 to 820	Oil. Salt bath 392 to 482°F (200 to 250°C), up to 0,787 inch (20 mm) thickness. Holding time after temperature equalization: 15 to 30 minutes. After hardening, tempering to the desired working hardness, see tempering chart.

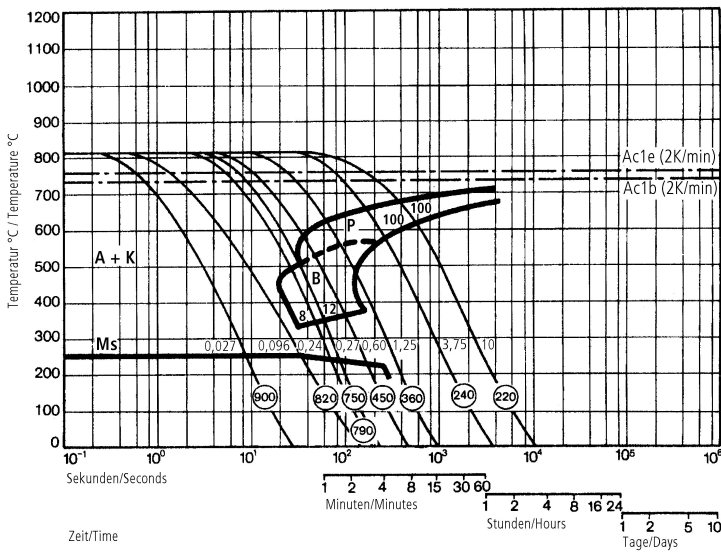
Tempering chart



Tempering:

Hardening temperature:
800°C
 Specimen size: square 20 mm

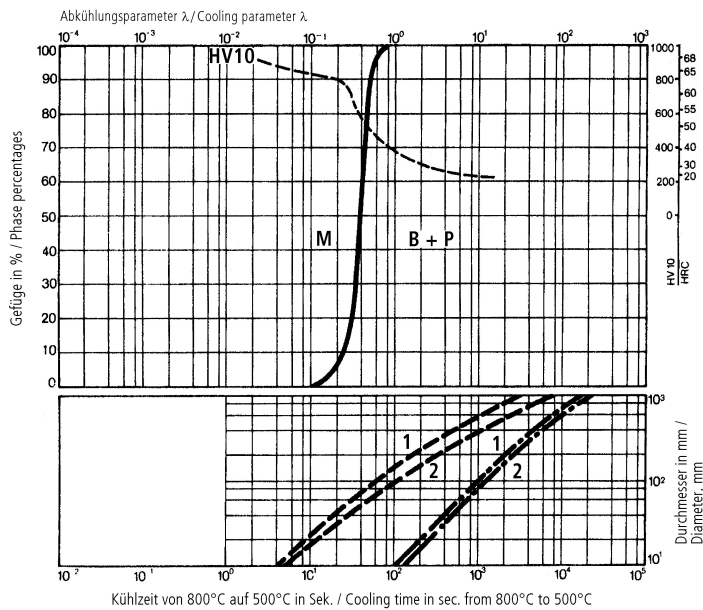
Continuous cooling CCT curves



Austenitising temperature: 1490°F (810°C)
Holding time: 15 minutes

O Vickers hardness
8...100 phase percentages
0.027...10 cooling parameter (λ), i.e. duration of cooling from 1472 to 932°F (800 to 500°C) in s x 10⁻²

Quantitative phase diagram

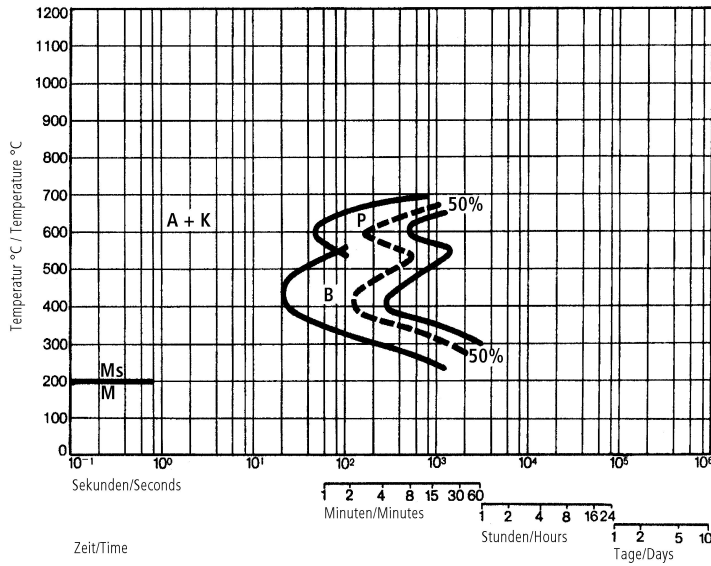


A... Austenite
B... Bainite
K... Carbide
M... Martensite
P... Pearlite

----- Oil cooling
- · - Air cooling

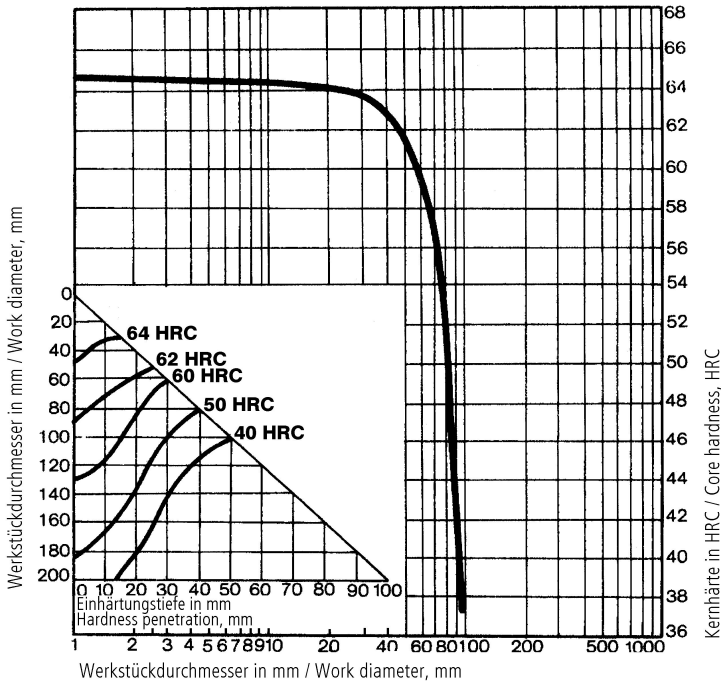
1... Edge or face
2... Core

Isothermal TTT curves



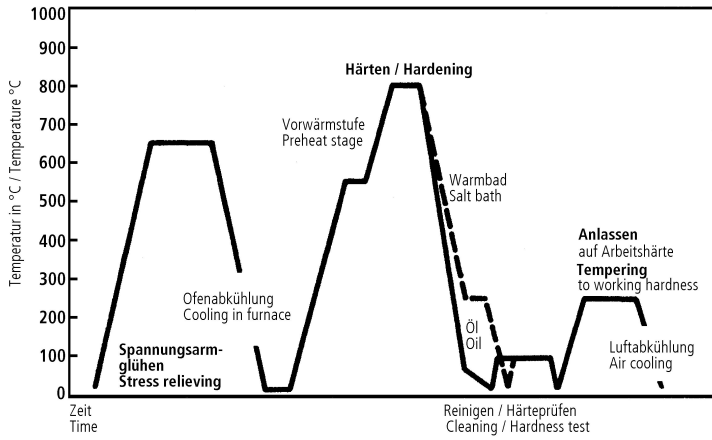
Austenitising temperature: 810°C / 1490°F
Holding time: 15 minutes

Influence of work diameter on core hardness and hardness penetration



Quenched from: 800°C / 1472°F
Agent: Oil

Heat treatment sequence



Physical Properties

Temperatura (°C)	20
Densidad (kg/dm ³)	7,85
Conductividad térmica (W/(m.K))	30
Calor específico (J/(kg.K))	460
Resistencia eléctrica específica (Ohm.mm ² /m)	0,35
Módulo de elasticidad (10 ³ N/mm ²)	210

Expansión térmica

Temperatura (°C)	100	200	300	400	500
Expansión térmica (10 ⁻⁶ m/(m.K))	11,5	12	12,2	12,5	12,8

Para más información vea www.acerosbohler.com

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ONE STEP AHEAD.